

What is claimed is:

1. An emulsifying method comprising the steps of:
 - (a) introducing plural kinds of fluids into a
 - 5 multistage channel; and
 - (b) mixing the fluids in the multistage channel to produce an emulsion,wherein shear stress is caused to generate in the fluids during the fluid mixing in the multistage channel,
- 10 thereby generating electric charges in the fluids due to the shear stress, while interfacial areas between the fluids are increased.
2. The emulsifying method according to claim 1, wherein said step (b) includes causing a degree of increase
- 15 in interfacial areas between the fluids and a degree of electric charge generation to gradually increase from an upstream side toward a downstream side of the multistage channel.
3. The emulsifying method according to claim 1,
- 20 wherein said step (b) includes dividing a fluid, joining fluids into one, converting a fluid flow, and making inertia-force-based mixing.
4. An emulsifying apparatus comprising:
 - plural inlets;
 - 25 a single outlet; and
 - a multistage channel provided between said plural inlets and said single outlet, said multistage channel being comprised of a plurality of channel stages each constituted by one or more channels, said multistage
 - 30 channel having a fluid passage sectional area thereof gradually decreasing from an inlet side to an outlet side of said emulsifying apparatus.
5. The emulsifying apparatus according to claim 4,

wherein said multistage channel includes an upstream-most channel stage comprised of plural channels individually connected to said inlets, a downstream-most channel stage comprised of a single channel connected to said outlet, and
5 plural intermediate channel stages interposed between said upstream-most and downstream-most channel stages and each constituted by plural channels,

each channel of the individual channel stage is in communication with at least one corresponding channel of
10 the immediately downstream channel stage,

the number of channels constituting each of the upstream-most and intermediate channel stages decreases as a position of the channel stage in the multistage channel gets closer to the outlet, and

15 the individual channel stage has a total channel sectional area that decreases as the position of the channel stage gets closer to the outlet.

6. The emulsifying apparatus according to claim 5, wherein the respective channels have substantially the same
20 sectional area.

7. The emulsifying apparatus according to claim 5, wherein each of said intermediate channel stages other than one adjacent to said downstream-most channel stage includes two mixing channels, each having first and second entries
25 and first exit, and one or more mixing/distributing channels disposed between said mixing channels and each having first and second entries and first and second exits,

said first and second entries of the individual mixing/distributing channel are in communication with said
30 first exit of a corresponding one mixing/distributing channel of the immediately upstream channel stage and said second exit of another corresponding mixing/distributing channel of the immediately upstream channel stage,

respectively, whereas said first and second exits of the individual mixing/distributing channel are in communication with said first entry of a corresponding one mixing/distributing channel or mixing channel of the immediately downstream channel stage and said second entry of another corresponding mixing/distributing channel or mixing channel of the immediately downstream channel stage, respectively.

8. The emulsifying apparatus according to claim 7, wherein said upstream-most channel stage includes two mixing channels and plural mixing/distributing channels disposed therebetween whose first and second entries are each connected to a corresponding one of said inlets, and said downstream-most channel stage includes a mixing channel whose first exit is connected to said outlet.

9. The emulsifying apparatus according to claim 4, wherein said each channel stage is constituted by a channel having an entry and an exit and having a tapered cross section, the entry of each individual channel is connected to said plural inlets or the exit of an immediately upstream channel, and the exit of each individual channel is connected to said outlet or the entry of an immediately downstream channel.

10. The emulsifying apparatus according to claim 4, wherein said multistage channel includes at least one division section for dividing a fluid, at least one confluence section for joining fluids into one, and at least one diversion section for diverting a fluid flow that are arranged in a predetermined order from the inlet side to the outlet side.

11. The emulsifying apparatus according to claim 4, wherein said multistage channel is comprised of one or more

channels each having a representative length varying from 100 μm to 500 μm .

12. The emulsifying apparatus according to claim 4, wherein said multistage channel is comprised of a series of
5 grooves formed in a joining surface of plates.

13. The emulsifying apparatus according to claim 4, further comprising:

upper and lower plate members; and
plural passage fluid modules provided in layer
10 between said upper and lower plate members,
wherein each of said passage fluid modules includes one or more mixing units and/or one or more mixing/distributing units,

a total number of the one or more mixing units and
15 the one or more mixing/distributing units in the individual fluid passage module is smaller than that of the units in the immediately upstream fluid passage module, and

each of the mixing units and/or the
mixing/distributing units in the individual fluid passage
20 module has two entries and at least one exit that is in communication with one of the entries of a corresponding one of the mixing units and/or the mixing/distributing units in the immediately downstream fluid passage module.

14. The emulsifying apparatus according to claim
25 13, wherein each of the mixing/distributing units has first and second entries, and has first and second exits that are in communication with the first entry of a corresponding mixing/distributing unit of the immediately downstream fluid passage module and the second entry of another
30 corresponding mixing/distributing unit of the immediately downstream fluid passage module, respectively.

15. The emulsifying apparatus according to claim 4, wherein said multistage channel is formed by grooving in a

joining surface of plates,

said multistage channel includes plural channel stages each having one or more first channels,

the number of the first channels of the individual
5 channel stage is greater than that of the first channels of the immediately downstream channel stage, and

each of the first channels is in communication with the first channels of the immediately downstream channel stage through a second channel provided between the channel
10 stage to which said each first channel belongs and the immediately downstream channel stage.